1079
B. Engg. (Electrical & Electonics Engg.)
3rd Semester
EE-305: Network Analysis and Synthesis

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt *five* questions in all, including Q. No. 1 which is compulsory and selecting atleast *two* questions from each Part-A & B.

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1. (a) How a network is realised for its synthesis?
   (b) How many maximum trees can be drawn from a graph having "n" nodes? Explain with an example.
   (c) Find laplace transform of $e^{-at} \cos \omega t$.
   (d) Write the statement of Sturm's test for PR function.
   (e) Write the properties of function to be PR function

(5*2)

Part – A

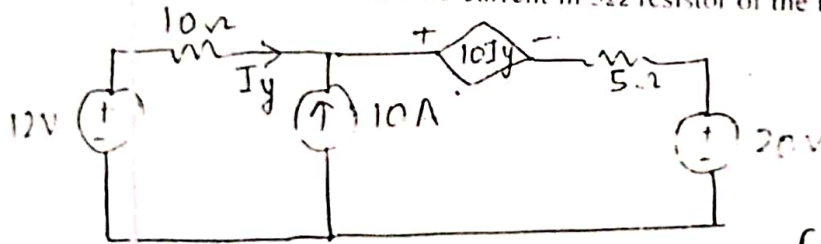2. Using superposition theorem, find the current in 5Ω resistor of the network of Figure 1. All resistances are in Ω.

Figure 1 (10)

3. (a) For the network of Figure 2, write down the f-cut set matrix for tree having 3H inductor and 2f capacitor as twigs and write down the cut-set equations.
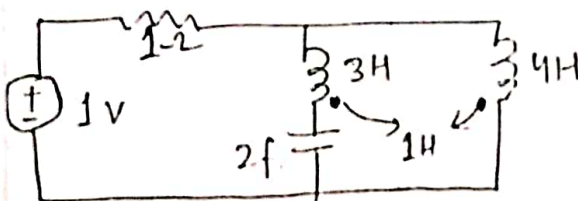

figure 2 (5)

(b) With the help of an example, explain the properties of incidence matrix as used in graph theory. How it can be converted to reduced incidence matrix?
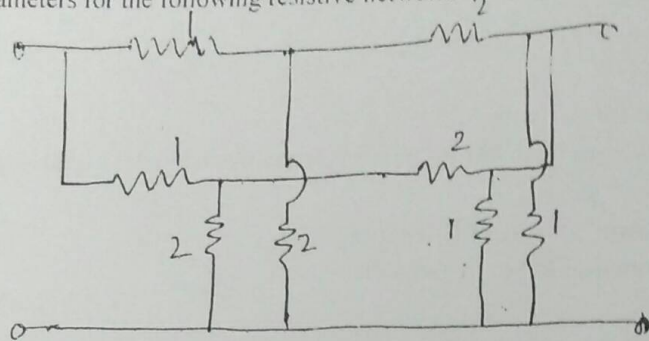
(5)

(2)

4. (a) Find the z-parameters of the resultant network. when two 2-port networks are connected in parallel-series combination.

(5)

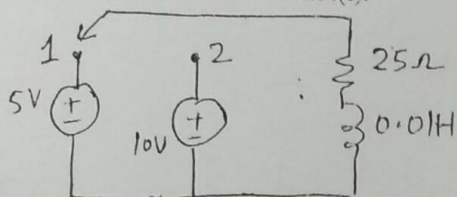(b) Find y-parameters for the following resistive network.

(5)

Part-B

5. In given RL circuit. the switch is in position 1 long enough to establish steady state condition and at t=0, switch is moved to position 2. Find the resultant current i(t).
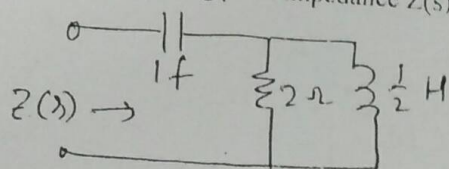

(10)

6. (a) Write the properties and necessary conditions of transfer function.

(b) For the given network, find driving point impedance Z(s). Locate the poles and zeros of this function in s-plane.

7. Realise the network function $Z(s) = \dfrac{(s+2)(s+4)}{s(s+3)}$ in Cauer I and Cauer II forms.

(7)

(10)

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